INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH

CONTENTS

Volume 36, 1998

International Journal of Production Research

Editor in Chief
Professor Roy J. Sury, PhD, CEng
Department of Manufacturing Engineering, Loughborough University
Leicestershire LE11 3TU, UK

Editor
John E. Middle, MSc, CEng

Reviews Editor
Robert I. M. Young, PhD

Editorial Board

Australia:	Dr G. M. Buxey, Deakin University
	Dr B. Jenney, Monash University
Belgium:	Professor L. F. Gelders, Centre for Industrial Management, Leuven
Canada:	Professor G. Abdulnour, Université du Quebec à Trois Rivières
France:	Professor J. E. Erschler, INSA-LAAS-CNRS, Toulouse
Finland:	Professor H. E. Andersin, Helsinki University of Technology
Germany:	Professor Dr-Ing H. Bullinger, Fraunhofer-IAO, Stuttgart
	Professor Dr-Ing H. J. Warnecke, Fraunhofer-IPA, Stuttgart
India:	Dr S. Sahu, Indian Institute of Technology, Kharagpur
Israel:	Professor E. Dar-El, Technion-Israel Institute of Technology, Haifa
	Professor D. Sipper, Tel Aviv University
Italy:	Professor U. Bertele, Politecnico di Milano, Milano
Japan:	Professor M. Yamamoto, Hosei University, Tokyo
	Professor H. Yamashina, Kyoto University, Kyoto
The Netherlands:	Professor Dr J. W. Bertrand, Technische Universiteit Eindhoven, Eindhoven
	Dr E. M. Goldratt, Dijkstraat, VG Roelofarendsveen
Poland:	Professor Dr Z. Wilimowski, Technical University of Wrocław, Wrocław
PR China:	Professor W. S. Lau, Hong Kong Polytechnic University
	Professor S. C. Wang, Beijing University of Aeronautics and Astronautics, Beijing
Singapore:	Professor L. Lim, Nanyang Technological University
South Africa:	Professor R. Reinecke, University of Stellenbosch
South Korea:	Dr H. Hwang, Korea Advanced Institute of Science and Technology
Sweden:	Professor R. W. Grubbström
United Kingdom:	Professor C. B. Besant, Imperial College of Science and Technology, London
	Professor M. Brady, University of Oxford, Oxford
	Professor R. H. Hollier, University of Manchester
	Professor J. E. L. Simmons, Heriot-Watt University, Edinburgh
USA:	Professor J. F. Bard, The University of Texas at Austin, Texas
	Professor W. L. Berry, Ohio State University, OH
	Dr T.-C. Chang, Purdue University, IN
	Dr P. Dewhurst, University of Rhode Island, RI
	Professor E. A. Elsayed, Rutgers State University, NJ
	Professor J. N. D. Gupta, Ball State University, IN
	Professor S. R. T. Kumara, The Pennsylvania State University, PA
	Professor S. A. Melnyk, Michigan State University, MI
	Dr D. L. Woodruff, The University of California at Davis, CA
Founding Editor:	Professor N. A. Dudley, Emeritus Professor, University of Birmingham, UK

Subscription Information

The *International Journal of Production Research* is published monthly by Taylor & Francis Ltd, One Gunpowder Square, London EC4A 3DF. From January 1999, the frequency of publication will be increased to eighteen per year.

Annual Institutional Subscription, Volume 37, 1999
Print ISSN 0020-7543 $2280.00 £1382

A subscription to the print edition includes free access for any number of concurrent users across a local area network to the online edition, ISSN 1366-588X.

For more information, visit our website:
`http://www.tandf.co.uk/E-pub/CWONLINE.HTM`

Print subscriptions only are also available to individual members of the Manufacturing Division of the Institution of Electrical Engineers, on application to the Institution.

Periodical postage paid at Jamaica, New York 11431, USA. US Postmasters: send address changes to *International Journal of Production Research*, Publications Expediting Inc., 200 Meacham Avenue, Elmont, New York 11003, USA. Air freight and mailing in the USA by Publications Expediting Inc.

Typeset in the UK by Keyword Publishing Services Ltd and printed by Hobbs the Printers Ltd, Southampton, UK. The paper used in this publication is 'acid free' and conforms to the American Standards Institute requirements in this respect.

Dollar rates apply to subscribers in all countries except the UK and the Republic of Ireland where the pound sterling price applies. All subscriptions are payable in advance and all rates include postage. Journals are sent by air to the USA, Canada, Mexico, India, Japan and Australasia. Subscriptions are entered on an annual basis, i.e. January to December. Payment may be made by sterling cheque, dollar cheque, international money order, National Giro, or credit card (Amex, Visa, Mastercard).

Orders originating in the following territories should be sent direct to the local distributor. **India:** Universal Subscription Agency Pvt. Ltd, 101–102 Community Centre, Malviya Nagar Extn, Post Bag No. 8, Saket, New Delhi 110017. **Japan:** Kinokuniya Co. Ltd, Journal Department, PO Box 55, Chitose, Tokyo 156. **USA, Canada and Mexico:** Taylor & Francis, Inc., 325 Chestnut Street, 8th Floor, Philadelphia, PA 19106, USA. **UK and all other territories:** Taylor & Francis Ltd, Rankine Road, Basingstoke, Hampshire RG24 8PR, UK.

Advertising in Taylor & Francis journals

All advertisement enquiries to: Di Owen Marketing, 15 Upper Grove Road, Alton, Hampshire GU34 1NW, UK. Tel/Fax: +44 (0)1420 89142 (for the world excluding North America); or Advertising Department, Taylor & Francis Inc., 325 Chestnut Street, 8th Floor, Philadelphia, PA 19106, USA. Tel: +1 (215) 625 8900; Fax: +1 (215) 625 2940 (for North America).

Copyright © 1998 Taylor & Francis Ltd

International Journal of Production Research

Volume 36, 1998—CONTENTS

No. 1 January 1998

The effect of process flexibility on productivity for classes of similar job shops. K. A. PFLUGHOEFT and G. K. HUTCHINSON 1

An intelligent hybrid system for customer requirements analysis and product attribute targets determination. R. Y. K. FUNG, K. POPPLEWELL and J. XIE 13

A semi-dynamic time window constrained routeing strategy in an AGV system. S. RAJOTIA, K. SHANKER and J. L. BATRA 35

Periodic flow line scheduling. R. F. MCPHERSON and K. PRESTON WHITE, JR. 51

Tolerance control and propagation for the product assembly modeller. A. ASHIAGBOR, H.-C. LIU and B. O. NNAJI 75

A genetic algorithm for facility layout design in flexible manufacturing systems. M. RAJASEKHARAN, B. A. PETERS and T. YANG 95

On a medium term product recovery and disposal strategy for durable assembly products. H. R. KRIKKE, A. VAN HARTEN and P. C. SCHUUR 111

Planning quality inspection operations in multistage manufacturing systems with inspection errors. J. LEE and S. UNNIKRISHNAN 141

CASE: A clustering algorithm for cell formation with sequence data. G. JAYAKRISHNAN NAIR and T. T. NARENDRAN 157

Economic design of high stress first burn-in processes. W. L. LU and Y. V. HUI 181

Dynamic metamodelling in capacity planning. E. J. STAHLMAN and J. K. COCHRAN 197

Cooperative system design in scheduling. P. LOPEZ, P. ESQUIROL, L. HAUDOT and M. SICARD 211

Petri net models for message manipulation and event monitoring in an FMS cell. H. CHO 231

Manufacturing control with a push–pull approach. C.-C. HUANG and A. KUSIAK 251

A generalized economic model for joint determination of production run, inspection schedule and control chart design. M. A. RAHIM and M. BEN-DAYA 277

No. 2 February 1998

A comparison of the capabilities of software tools designed to support the rapid prototyping of flexible and extendible manufacturing systems. R. H. Weston 291

Parameters affecting the effectiveness of MRP systems: a review. J. H. Y. Yeung, W. C. K. Wong and L. Ma 313

Dynamic buffering. S. C. Gardiner and J. H. Blackstone, Jr. 333

A semi-analytical method of finding an optimum cutter path for face milling 3-sided convex surfaces. A. T. M. Jamil 343

Operations planning for a single-stage kanban system operating under linear demand. B. R. Sarker and C. V. Balan 357

Performance, reliability, and performability of material handling systems. B. M. Beamon 377

Fuzzy logic and neural networks for design of process parameters: a grinding process application. Y.-T. Chen and S. R. T. Kumara 395

From CAD to computer aided welding. O. Legoff and J. Y. Hascoët ... 417

A reference framework for the application of MADM fuzzy techniques to selecting AMTS. A. Perego and A. Rangone 437

Design of the optimum product specifications for S-type quality characteristics. B.-R. Cho and M. D. Phillips 459

An approach to the dynamic modelling of manufacturing systems. G. Chryssolouris, N. Anifantis and S. Karagiannis 475

The mixed-model U-line balancing problem. D. Sparling and J. Miltenburg 485

The use of management accounting systems in manufacturing. T. D. Fry, D. C. Steele and B. A. Saladin 503

A study of scheduling rules of flexible manufacturing systems: a simulation approach. I. Sabuncuoglu 527

Development of an intelligent castability and cost estimation system. B. Bidanda, M. Kadidal and R. E. Billo 547

Book reviews 569

Announcements 571

No. 3 March 1998

Scoping study on business process reengineering: towards successful IT application. M. I. Barber and R. H. Weston 575

Statistical analysis of downtime severity rates. A. H. Boyd and D. Radson 603

On the automatic generation of product assembly sequences. C. K. Choi, X. F. Zha, T. L. Ng and W. S. Lau 617

A procedure for training an artificial neural network with application to tool wear monitoring. S. PURUSHOTHAMAN and Y. G. SRINIVASA 635

Integrated scheduling of material handling and manufacturing activities for just-in-time production of complex assemblies. M. F. ANWAR and R. NAGI 653

Improving job-shop schedules through critical pairwise exchanges. C. CHU, J.-M. PROTH and C. WANG 683

Automated setup selection in feature-based process planning. H.-C. WU and T.-C. CHANG 695

Routing policies and COI-based storage policies in picker-to-part systems. F. CARON, G. MARCHET and A. PEREGO 713

Evaluation of a three-state adaptive sample size $\bar{X}$ control chart. L. S. ZIMMER, D. C. MONTGOMERY and G. C. RUNGER 733

A two-phase genetic algorithm to solve variants of the batch sequencing problem. C. JORDAN 745

A genetic algorithm approach to scheduling PCBs on a single machine. O. Z. MAIMON and D. BRAHA 761

Mathematical modelling using different endmills and tool placement problems for 4- and 5-axis NC complex surface machining. Y.-S. LEE 785

Modelling and optimization of the assembly process in a flexible cell for aircraft panel manufacturing. A. AGNETIS and R. MACCHIAROLI 815

Meta-analysis applied to operations management: summarizing the results of empirical research. C. FORZA and F. DI NUZZO 837

Book reviews 863

Erratum 865

No. 4 April 1998

Setting WIP levels with statistical throughput control (STC) in CONWIP production lines. W. J. HOPP and M. L. ROOF 867

Product life cycle cost analysis: state of the art review. Y. ASIEDU and P. GU 883

A comparative study of the effect of tool geometry with negative SCEAs on machining parameters. I. A. KATTAN, V. C. VENKATESH and K. R. CURRIE 909

An integrated framework for automated process planning: design and analysis. K. A. ALDAKHILALLAH and R. RAMESH 939

Robot arc welding operations planning with a rotating/tilting positioner. D.-W. KIM, J.-S. CHOI and B. O. NNAJI 957

Setup planning using Hopfield net and simulated annealing. J. CHEN, Y. F. ZHANG and A. Y. C. NEE 981

Automatic *a priori*, *a posteriori* or appropriate determination of subassemblies. C. MASCLE 1001

Designs of components and manufacturing systems for agile manufacturing. G. H. LEE 1023

Towards a knowledge-based scheduling system for semiconductor testing. S. DE and A. LEE 1045

Building a logical model in the machining domain for CAPP expert systems. V. V. KRYSSANOV, A. S. KLESHCHEV, Y. FUKUDA and K. KONISHI ... 1075

Constraint time buffer determination model. Y.-M. TU and R.-K. LI ... 1091

Determining minimax profile errors for the cross-sections of machined parts. J.-M. CHEN 1105

Sequencing, lot sizing and scheduling of several products in job shops: the common cycle approach. J. OUENNICHE and F. BOCTOR 1125

Optimum junction point location and inventory levels in serial hybrid push/pull production systems. J. K. COCHRAN and S.-S. KIM 1141

Book review 1157

No. 5 May 1998

The effect of autocorrelated demand in JIT production systems. K. TAKAHASHI and N. NAKAMURA 1159

Determination of optimal AGV fleet size for an FMS. S. RAJOTIA, K. SHANKER and J. L. BATRA 1177

Incorporating human resources in group technology/cellular manufacturing. A. L. H. ECKSTEIN and T. P. ROHLEDER 1199

Agile manufacturing: enablers and an implementation framework. A. GUNASEKARAN 1223

Job-shop scheduling using neural networks. A. S. JAIN and S. MEERAN ... 1249

The machine layout problem in robot cells. V. MATA and A. TUBAILEH ... 1273

An emerging theory of negative loss formation within manufacturing operations. R. C. BARKER 1293

Simultaneous lot sizing and loading of product families on parallel facilities of different classes. L. ÖZDAMAR and M. A. BOZYEL 1305

A TSP-based heuristic for forming machine groups and part families. C. H. CHENG, Y. P. GUPTA, W. H. LEE and K. F. WONG 1325

A model of machine-tool selection and operation allocation in FMS. A. ATMANI and R. S. LASHKARI 1339

CAD-model based inspection of sculptured surfaces with datums. X. HUANG and P. GU 1351

Minimizing the peak load: an alternate objective for dedicated storage policies. P. MONTULET, A. LANGEVIN and D. RIOPEL 1369

General rules for production planning with seasonal demand. R. METTERS 1387

A Petri net model for the operational design and analysis of segmented flow topology (SFT) AGV systems. M. BARAD and D. SINRIECH 1401

Evaluation of performance measures for multi-part, single-product kanban controlled assembly systems with stochastic acquisition and production lead times. O. FUJIWARA, X. YUE, K. SANGARADAS and H. T. LUONG ... 1427

Discussion: A note on 'Application of simulated annealing to a linear model for the formulation of machine cells in group technology'. G. SRINIVASAN 1445

Response to Srinivasan's note. S. SOFIANOPOULOU 1449

No. 6 June 1998

A conceptual framework for interactive and blackboard based CAPP. G. VAN ZEIR, J.-P. KRUTH and J. DETAND 1453

A spatial rule adaptation procedure for reliable production control in a wafer fabrication system. D. H. BAEK, W. C. YOON and S. C. PARK 1475

A microeconomic modelling and analysis methodology for production quantity determination. S. F. SREBRANIG and M. KRISHNAMURTHI 1493

Multicriteria design and control of a cellular manufacturing system through simulation and optimization. J. S. SHANG and P. R. TADIKAMALLA ... 1515

FMS machine loading: a simulated annealing approach. S. K. MUKHOPADHYAY, M. K. SINGH and R. SRIVASTAVA 1529

A genetic algorithm approach for multiple criteria facility layout design. A. A. ISLIER 1549

An adaptive acceptance control chart for tool wear. Z. WU 1571

Manufacturing flexibility: a literature review. A. DE TONI and S. TONCHIA 1587

Minimizing the sum of job earliness and tardiness in a multimachine system. R. B. HEADY and Z. ZHU 1619

Models for tool-path plan optimization in patch-by-patch machining. D. VEERAMANI and Y.-S. GAU 1633

Feature-based memory association for group technology. Y. KAO and Y. B. MOON 1653

A constraint-based genetic algorithm for concurrent engineering. D. CORMIER, P. O'GRADY and E. SANII 1679

Estimation of tool requirements in single-stage multimachine systems. P.-H. KOO, J. M. A. TANCHOCO and J. J. TALAVAGE 1699

A retrieval sequencing heuristic for miniload end-of-aisle automated storage/retrieval systems. S. MAHAJAN, B. V. RAO and B. A. PETERS 1715

Times and costs analysis for sheet-metal cutting processes in an integrated CAD/CAM system. E. CUESTA, J. C. RICO, S. MATEOS and C. M. SUAREZ 1733

No. 7 July 1998

A competitive neural network approach to multi-objective FMS scheduling. H.-S. Min, Y. Yih and C.-O. Kim 1749

Cam profile machining by triarc curve fitting. M.-Y. Yang, T.-Y. Shon and T.-M. Lee 1767

An heuristic for configuring a mixed uni/bidirectional flow path for an AGV system. S. Rajotia, K. Shanker and J. L. Batra 1779

Part type selection, machine loading and part type volume determination problems in FMS planning. G. K. Nayak and D. Acharya 1801

A feature modification framework for the generation of alternative process plans. M. Y. Yang and S. C. Lee 1825

Just-in-time manufacture of home-use sewing machines using backward scheduling. C.-J. Liao and H.-T. Lin 1841

Development of the surface mount assembly process through an angular board orientation. L. K. Moyer and S. M. Gupta 1857

An interactive scheduler for a wafer probe centre in semiconductor manufacturing. S.-C. Huang and J. T. Lin 1883

Optimization of the nibbling operation on an NC turret punch press. D. Veeramani and S. Kumar 1901

A new approach to analysing non-normal quality data with application to process capability analysis. H. Shore 1917

The effect of sudden material handling system breakdown on the performance of a JIT system. S. M. Gupta and Y. A. Y. Al-Turki 1935

Evaluation of AGV routeing strategies using hierarchical simulation. R. W. Seifert, M. G. Kay and J. R. Wilson 1961

A new algorithm and tool design for CNC profile burnishing. A. I. El-Wahab and A. M. Abdelhay 1977

Improving the performances of part dispatching based on multiple process plans using graph theory. Z. Yang, L. Qiao and L. Jiang 1987

A hierarchical model for the cell loading problem of cellular manufacturing systems. M. S. Akturk and G. R. Wilson 2005

Justification of concurrent engineering environments based on fuzzy mathematics. M.-C. Wu 2025

Book review 2043

No. 8 August 1998

Performance measurement in a theory of constraints environment. A. Lockamy III and M. S. Spencer 2045

Optimal operation grouping and sequencing technique for multistage machining systems. I.-T. Kim and H.-W. Suh 2061

Enterprise integration: issues and methods. H. Noori and F. Mavaddat 2083
A concurrent approach to cell formation and assignment of identical machines in group technology. N. Wu 2099
Optimization of machining conditions for turning cylindrical stocks into continuous finished profiles. M.-C. Chen and C.-T. Su 2115
Optimizing the configuration of a keyboard assembly cell. T. A. Spedding, R. de Souza, S. S. G. Lee and W. L. Lee 2131
Robustness of capacity driven design strategies. T. S. Meinert and G. D. Taylor 2145
An integrated approach to solving the process plan selection problem in an automated manufacturing system. M. K. Tiwari and N. K. Vidyarthi 2167
Multi-objective machine-part cell formation through parallel simulated annealing. C.-T. Su and C.-M. Hsu 2185
Mixed-model assembly line sequencing heuristics for smoothing component parts usage: a comparative analysis. E. A. Duplaga and D. J. Bragg ... 2209
On-line packing with boxes of different sizes. J. Hemminki, T. Leipälä and O. Nevalainen 2225
A fuzzy rule-based approach for dynamic control of kanbans in a generic kanban system. T.-M. Chang and Y. Yih 2247
Design of a flexible zone individuals control chart. S. Parkhideh and B. Parkhideh 2259
A new dynamic programming formulation of $(n \times m)$ flowshop sequencing problems with due dates. A. I. Sonmez and A. Baykasoglu 2269
Correlating MRP system nervousness with forecast errors. C.-J. Ho and T. C. Ireland 2285
Pattern recognition of machine tool faults with a fuzzy mathematics algorithm. Q. Liu, C. Zhang and A. C. Lin 2301
Minimizing production flow time in a process and assembly job shop. D. H. Cummings McKoy and P. J. Egbelu 2315
Announcements 2333

No. 9 September 1998

Predicting volume distance performance for layout problems with static distance functions. C. J. Malmborg, F. A. Bukhari and C. McDermott 2339
A multi-level modelling system for the design of flexible machining installations. S. T. Newman, L. B. Newnes and R. Bell 2355
Objective satisfaction assessment using neural nets for balancing multiple objectives. B. Grabot 2377
Minimizing tardy jobs in a two-stage hybrid flowshop. J. N. D. Gupta and E. A. Tunc 2397

Batch production using process sequence cells. D. J. Stockton and R. J. Lindley 2419
Production sequencing problem with re-entrant work flows and sequence dependent setup times. H. Hwang and J. U. Sun 2435
The measurement of heat distribution in stereolithography electrodes during electro-discharge machining. A. Arthur and P. M. Dickens 2451
Aggregate planning in hybrid flowshops. E. H. Aghezzaf and A. Artiba 2463
Automated feature validation for creating/editing feature-based component data models. N. N. Z. Gindy, Y. Yue and C.-F. Zhu 2479
Integration of inductive learning and neural networks for multi-objective FMS scheduling. C.-O. Kim, H.-S. Min and Y. Yih 2497
Manufacturing capability measurement for cellular manufacturing systems. R. P. Baker and P. G. Maropoulos 2511
Tolerance design for products with asymmetric quality losses. C. C. Wu and G. R. Tang 2529
A genetic algorithm for scheduling job families on a single machine with arbitrary earliness/tardiness penalties and an unrestricted common due date. S. Webster, P. D. Jog and A. Gupta 2543
A fuzzy basis material removal optimization strategy for sculptured surface machining using ball-nosed cutters. W. L. R. Ip 2553
Hybrid compliance control for intelligent assembly in a robot work cell. A. Jaura, M. O. M. Osman and N. Krouglicof 2573
Balancing facilities in aggregate production planning: make-to-order and make-to-stock environments. K. Kogan, E. Khmelnitsky and O. Maimon 2585
A study of quality management practices and performance in Asia and the South Pacific. L. M. Corbett, E. E. Adam, Jr, N. J. Harrison, T. S. Lee, B.-H. Rho and D. Samson 2597
A real-time scheduling mechanism for a flexible manufacturing system: using simulation and dispatching rules. K.-C. Jeong and Y.-D. Kim 2609
A note on scheduling jobs with missing operations in permutation flow shops. R. Leisten and M. Kolbe 2627
Announcement 2631

No. 10 October 1998

An integrated management procedure of multi-item mixed-line production system—its hierarchical structure and performance evaluation. H. Katayama 2633
Iterative procedures for multi-period order selection and loading problems in flexible manufacturing systems. D.-H. Lee and Y.-D. Kim 2653

A comparative study of performance measures for throughput of a mixed model assembly line in a JIT environment. J. Bukchin 2669

Family-based scheduling of shops with functional layouts. J. B. Jensen, M. K. Malhotra and P. R. Philipoom 2687

Accelerating the generation of work measurement standards through automatic speech recognition: a laboratory study. Y. Cohen, B. Bidanda and R. E. Billo 2701

Using simulated annealing to solve a multiobjective assembly line balancing problem with parallel workstations. P. R. McMullen and G. V. Frazier 2717

Feature-based fixturing analysis for machining parts represented with multiple sets of features. Y.-J. Tseng 2743

On-line production control of a flexible multi-cell manufacturing system operating in a highly dynamic environment. A. Herbon 2771

Batching multiple products on parallel heterogeneous machines in a closed job shop. J.-M. Lee and C. H. Chung 2793

Enhancing the firm's performance through quality and supply base management: an empirical study. K. C. Tan, R. B. Handfield and D. R. Krause 2813

Feature-based design by volumetric machining features. T. N. Wong and K. W. Wong 2839

The impact of organizational structure on the level of JIT attainment: towards theory development. X. A. Koufteros and M. A. Vonderembse ... 2863

Deadlock prediction and avoidance for zone-control AGVS. M.-S. Yeh and W.-C. Yeh 2879

CAD-based integrated tolerancing system. B. Ramani, S. H. Cheraghi and J. M. Twomey 2891

Production planning for flexible manufacturing systems with multiple machine types: a practical method. H. F. Lee 2911

Announcement 2929

No. 11 November 1998

Comparison of Order Review and Release techniques in a dynamic and uncertain job shop environment. R. Cigolini, M. Perona and A. Portioli 2931

Static neural network process models: considerations and case studies. D. W. Coit, B. T. Jackson and A. E. Smith 2953

Tolerance chart optimization for quality and cost. A. Jeang 2969

Computational method for diagnosis of variation-related assembly problems. M. Chang and D. C. Gossard 2985

A conceptual approach for an architecture of distributed objects for the integration of heterogeneous data processing systems in manufacturing companies. H.-J. Bullinger, K.-P. Fähnrich and T. Linsenmaier ... 2997

Heuristics for generalized shop scheduling problems based on decomposition. K. Krüger, Y. N. Sotskov and F. Werner 3013

Understanding concurrent engineering implementation: a case-study approach. N. J. Brookes and C. J. Backhouse 3035

Vulnerability of production systems with multi-supplier network: a case study. V. Albino, A. C. Garavelli and O. G. Okogbaa 3055

An alternative approach to assembly tolerance stack analysis. B. K. A. Ngoi and K. C. Cheong 3067

Analysis of production systems when run length influences product quality. T. L. Urban 3085

A case study in a dual resource constrained job shop. C.-J. Liao and H.-T. Lin 3095

Taxonomy of the manufacturing strategies of large Spanish industrial companies. L. Avella, E. Fernandez and C. J. Vazquez 3113

Advanced manufacturing technology use: exploring the effect of the nationality variable. S. Kotha and P. M. Swamidass 3135

Recognition of interacting rotational and prismatic machining features from 3-D mill-turn parts. Y.-J. Tseng and S. B. Joshi 3147

Control of a batch-processing machine: a computational approach. A. N. Avramidis, K. J. Healy and R. Uzsoy 3167

Statecharts to specify the control of automated manufacturing systems. J. C. Marty, A. E. K. Sahraoui and M. Sartor 3183

Two observations on the grouping efficacy measures for goodness of block diagonal forms. R. A. Sandbothe 3217

Book reviews 3223

Announcement 3225

No. 12 December 1998

Economical evaluation of disassembly operations for recycling, remanufacturing and reuse. M. R. Johnson and M. H. Wang 3227

Solving facility layout problems with geometric constraints using parallel genetic algorithms: experimentation and findings. K. Y. Tam and S. K. Chan 3253

The generic capsule approach to tolerance stack analysis. B. K. A. Ngoi, M. Agarwal and C. S. Chua 3273

Client–server model of integrated production facilities. K. Esfarjani and S. Y. Nof 3295

A Petri-net-based structure for AS/RS operation modelling. S. Hsieh, J.-S. Hwang and H.-C. Chou 3323
Information supported design for manufacture of injection-moulded rotational products. R. J. V. Lee and R. I. M. Young 3347
Economic complete inspection plans with multi-decision alternatives. S. H. Hong and E. A. Elsayed 3367
Trade-off and compatibility between performance: definitions and empirical evidence. R. Filippini, C. Forza and A. Vinelli 3379
The online tool switching problem with non-uniform tool size. B. Matzliach and M. Tzur 3407
MULTI-HOPE: a tool for multiple floor layout problems. J. S. Kochhar and S. S. Heragu 3421
A genetic algorithm based procedure for more realistic job shop scheduling problems. M. A. B. Candido, S. K. Khator and R. M. Barcia 3437
Analysis of storage assignment policies in less than unit load warehousing systems. C. J. Malmborg and K. M. Altassan 3459
Control chart for multivariate attribute processes. X. S. Lu, M. Xie, T. N. Goh and C. D. Lai 3477
Analysis on multiple sets of feature-based tool paths for prismatic machining parts. Y.-J. Tseng and C.-C. Lin 3491
Book reviews 3511
Referees List 3515
Index of Authors 3527
Announcement 3539